

Paul P. Huelskamp PE, PS
Miami County Engineer

**Miami County Engineer's Office
& Highway Garage**
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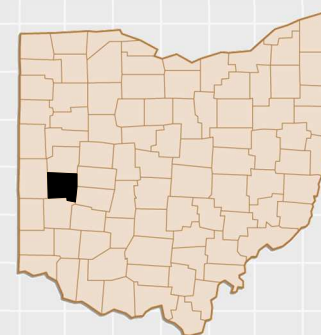
<http://co.miami.oh.us/engineer/index.htm>

Hours

7:30 am - 4:00 pm
Monday thru Friday

Summer Garage Hours

6:30 am - 3:00 pm



Miami County, Ohio
Population: 102,506
Elevation: 827 ft.



Miami County Engineer's

2014-2015 Annual Report

Honorable Board of Miami County Commissioners,

April 2015

In compliance with section 5543.02 of the Ohio Revised Code, I am pleased to offer this 2014-2015 annual report detailing our efforts over the past year to adequately maintain county-owned roads, bridges and culverts. Along with a description of completed projects, the report also highlights projects we hope to complete in 2015 and beyond, with associated cost estimates.

2014 was characterized by a number of severe weather events that significantly impacted our work priorities. Near record cold and snowfall from January thru March kept our crews busier than usual in keeping roads clear for safe travel. We struggled to maintain adequate salt reserves as our drivers, as well as those of the townships and other entities we supply, were continually called back out to tackle persistent snow and ice conditions. Even though we budget salt and overtime expenses based upon a typical plowing season, costs associated with last year's winter clearly exceeded our estimates. Subsequently, the inflated cost of the plowing season had to be reconciled by altering, delaying, or rescheduling budgeted projects we had previously earmarked for completion in 2014, ultimately resulting in fewer repaved roads and other concessions.

No sooner had we recovered from the brutal winter than the county experienced one of the heaviest rain events in local history. Termed a 1000-year storm, the May 21, 2014, cloudburst dumped 5 inches of rain over a 3 hour period, leading to localized flooding that closed Interstate 75, much of downtown Troy, and portions of Tipp City. As the waters receded, numerous culverts and ditches throughout the county were found to have been overwhelmed by the sheer volume of the deluge and in need of repair. This required our crews to divert their efforts from other planned projects and devote a number of weeks to restoring drainage infrastructure.



May 21 Flooding in Tipp City

In spite of these setbacks, we continued our efforts to maintain county roadways in serviceable condition, relying heavily on dura-patch and crack sealing practices to help keep miles of pavement intact until repaving can be scheduled. We also continue to look for new and innovative ways to maintain our roadways, such as our new fog seal program which was implemented last summer. Based upon the positive results we've seen thus far, we intend to continue fog-sealing this year as a less costly alternative to paving. While funding is always a major concern for us, we will continue to work with the state legislature and other entities to devise the most efficient and advantageous ways to utilize "your" money for "your" benefit.

In 2014 we continued the replacement of malfunctioning, undersized, or failing culverts throughout the county. By year's end we had replaced 40 pipes. This was fewer than anticipated due to construction delays resulting from the May flood. Our efforts will continue aggressively this year as we systematically work through a prioritized list of replacements based upon our current inventory of 2,693 culverts.

A number of retirements over the past several years had left us at historically low staffing levels entering 2014. After reorganizing our workforce to optimize efficiency, we ended the year with some new personnel whose prior work experience has been a welcome addition to the organization. We now enter 2015 with manpower quotas that correspond more closely to the everyday and emergency winter demands of the department.

Please take a look at the information in this report to gain insight into our past accomplishments and future goals. If you have any questions about the duties or responsibilities of the County Engineer's Office, don't hesitate to contact me. As always, I appreciate the opportunity to serve you and the citizens of Miami County as your County Engineer.

Paul P. Huelskamp PE, PS



Finances

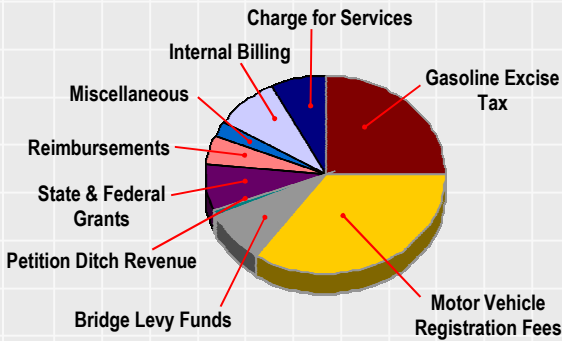
Funds to support County Engineer operations come primarily from highway user fees like gasoline taxes and vehicle registration fees. In 2014, we received **\$5,554,200** in such fees. Additional funds are generated through the Miami County Bridge levy, which voters have supported since 1951. Levy funds, which totaled **\$771,571** in 2014, are used to build, maintain and repair the large number of bridges in our county.

Whenever possible, we pursue Federal grant money and Ohio Public Works Commission funds to bring tax money back for our use locally. By using local match money to qualify for state and federal funds, we maximize the use of county dollars to complete many projects that would otherwise be unaffordable. In 2014 we secured **\$698,475** in state and federal grant funds.

A breakdown of our 2014 Revenues and Expenditures is shown below.

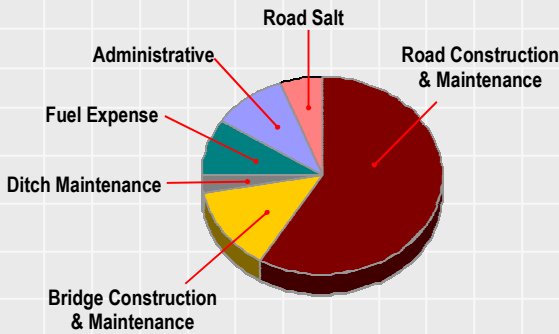
2014 Revenue

			2013 FOR COMPARISON
Motor Vehicle Registration Fees	36%	3,219,306	2,625,539
Gasoline Excise Tax	26%	2,334,894	2,299,886
Internal Billing	9%	794,249	779,400
Bridge Levy Funds	8.5%	771,571	769,403
State & Federal Grants	8%	698,475	1,838,059
Reimbursements	5%	437,512	173,245
Charge for Services	4%	387,908	593,609
Miscellaneous (Refunds, fines, interest, etc)	2.5%	242,041	254,185
Petition Ditch Revenue	1%	101,065	81,694
TOTAL	100%	\$8,987,021	\$9,415,020



2014 Expenditures

			2013 FOR COMPARISON
Road Construction & Maintenance	60%	5,221,373	4,066,864
Bridge Construction & Maintenance	13%	1,228,167	2,752,962
Fuel Expense	10%	893,341	824,294
Administrative	9%	840,364	793,461
Road Salt	5%	489,748	209,496
Ditch Maintenance	3%	244,816	46,544
TOTAL	100%	\$8,917,809	\$8,693,621



Major Equipment Purchased in 2014

EQUIPMENT	DEPARTMENT	COST
Two 2014 Western Star 4700 Dump Trucks with Stainless Steel Beds	Highway	\$243,670
Two "ODOT-Style" Snow Plows	Highway	18,791
John Deere Rotary Disc Mower	Highway	8,734
2014 Carlton Drum Style Chipper	Highway	36,648

Future Major Projects

ROADS

County Road 25A: Joint project with Tipp City. The project consists of the reconstruction/widening of County Road 25A from Michaels Road to St Rt 571. Estimated cost is \$4,000,000. County share is \$160,000. Sale date is July 2015.

Eldean Road Berm Stabilization: This project consists of overlaying and widening Eldean Road between Washington Road and Experiment Farm Road. Estimated cost is \$299,100 (80% Federal funds, 20% local funds). County share is \$59,820. Sale date is 2016.

MIA-CR25A-9.18: The project consists of repaving County Road 25A from the Troy corporation line to the Piqua corporation line. Estimated cost is \$2,056,000 (75% Federal funds, 25% local funds). County share is \$514,000. Sale date is first quarter of 2017.

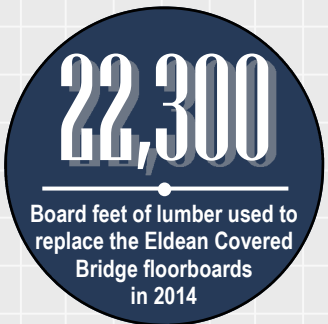
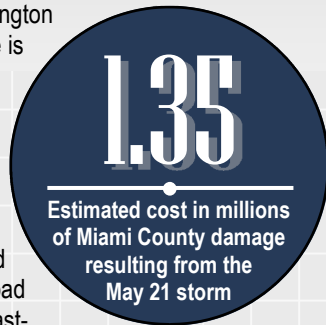
Troy-Sidney/Miami-Shelby County Line Rd. East Intersection: This project consists of improving sightlines and right-of-way clearances associated with the intersection of Troy-Sidney Road and Miami-Shelby County Line Road East. Currently, the configuration of this intersection results in less-than-desirable sight distance to the north for east-west traffic negotiating the intersection. A grading improvement, to be completed in conjunction with the Troy-Sidney Road Bridge #10.21 replacement in 2015, will greatly improve safe passage through this area.

BRIDGES

Replacement: Casstown-Sidney Road Bridge No. 6.32: This project consists of replacing the existing steel beam bridge with pre-stressed concrete beams or pre-cast concrete boxes. This replacement has been approved for 100% funding through the Ohio Bridge Partnership program, so no local funds will be used for engineering, planning, or construction. Sale date is 2016.

Replacement: Eldean Road Bridge No. 3.51: The project consists of replacing the existing bridge with pre-stressed concrete beams. Estimated cost is \$3,493,818. Construction (including CE) is 80% Federal funds, 15% bridge credit funds, and 5% local funds. Engineering is 100% local funds. Total county share is \$148,997. Sale date is 2015-2016.

Replacement: Croft Mill Road Bridge No. 0.37: This project consists of replacing the existing steel beam bridge with pre-stressed concrete beams. County Engineer Association of Ohio LBR funds will be available to fund 95% of this project, which is estimated to cost a total of \$1,391,000. Sale date is 2020.



Personnel

Retirements, Hirings, Promotions, etc.

Larry Vore retired on October 31, 2014 after 13 years of service at the Highway Garage. We thank Larry for his dedication as a heavy equipment operator and wish him all the best in his retirement.

Heath Brewer, Dean Eley, and Richard Canan joined the Highway Garage on November 17, 2014 in the position of Highway/Bridge Worker 1. Each of these individuals brings positive past experience and a good work ethic to their position with the county. We wish them a long and rewarding career with the Highway Department.

TJ Bernard joined the Miami County Engineer's Office on May 12, 2014 as an Engineering Technician 1. TJ, who earned his Engineering degree from the University of Dayton, will be undertaking numerous duties including bridge inspections, CAD drawing, surveying, permitting, construction inspection, and project development.

Rob Jacquemin and Jason Lyle were both promoted to the position of Highway/Bridge Worker 4 during the past year, taking over duties on the Road Grader, Gradall, and other heavy equipment. Congratulations to Rob and Jason on making this successful transition.

	DITCH NAME	No.	CONSTRUCTION COST	ANNUAL MAINTENANCE COLLECTION	TYPICAL ANNUAL EXPENSES
**	BEARD	807	\$10,876.54	\$1,300.56	\$1,700.00
**	COTTINGHAM	806	\$10,815.11	\$3,267.37	\$3,650.00
*	DYE MILL	805	\$22,460.67	\$5,025.16	\$6,900.00
* **	FRESHOUR	841	\$11,916.49	\$1,191.70	\$2,400.00
**	FROSTY-LANDIS	826	\$34,082.69	\$2,722.02	\$2,900.00
	HARTSTEIN-SWEITZER	829	\$25,373.50	\$774.59	\$830.00
**	HARWOOD	818	\$14,278.85	\$2,141.86	\$3,000.00
*	HELMICK HARLACHER	833	\$37,225.00	\$1,489.42	\$3,800.00
*	LANE-HATHAWAY	842	\$18,901.11	\$1,890.26	\$2,200.00
**	LEONARD	811	\$49,627.41	\$20,027.85	\$22,000.00
	LUTHERAN ROAD GP.		MONT.	\$388.51	MONT.
*	MARSH	817	\$9,889.99	\$604.04	\$900.00
	MOHLER JOINT	363	MONT.	\$1,631.30	MONT.
	MUMFORD	846	\$68,543.11	\$1,386.45	\$600.00
	PEMBERTON	843	\$18,708.50	\$1,165.91	\$1,450.00
*	REEDER	838	\$39,345.90	\$1,953.68	\$3,150.00
**	REIGHARD	824	\$11,934.00	\$1,754.58	\$800.00
	SHELBY COUNTY JT.		SHELBY	\$6,952.93	SHELBY
	SWAILES RUN	844	\$52,500.00	\$1,020.00	\$500.00
	TROY-CONCORD	821	\$318,908.52	\$21,993.20	\$32,000.00
	UPPER LUDLOW	845	\$264,994.15	\$1,913.80	\$1,200.00
* **	WAUGER BRANCH	808	\$44,862.73	\$4,482.92	\$6,300.00
	WELSCH	814	\$18,665.30	\$887.01	\$425.00

* = EVALUATE CURRENT COLLECTION
** = CONSTRUCTION BASE NEEDS RE-EVALUATED
- LUTHERAN RD. GP. JOINT AND MOHLER JOINT = MONT. CO. MAINT. - SHELBY COUNTY JT. DITCHES = SHELBY COUNTY MAINTENANCE



Geographic Information System (GIS) format. Once GIS is fully integrated, nearly all relevant tax map data will be available 24/7 from a variety of websites.

In addition to tax map work, in 2014 the department reviewed the content and mathematical accuracy of 157 land surveys of individual properties filed for record with the County Engineer. The department also reviewed and checked the mathematical accuracy of 59 Recorder's Plats, which consist primarily of residential and commercial subdivisions, street and alley vacations, annexations, and right of way plans of road projects.

Drainage

CULVERTS

Runoff resulting from the May 21 rainstorm overwhelmed a number of culverts throughout the county. The most significant damage occurred on Kessler-Frederick culvert # 2.011, requiring that our Bridge Crew replace 48 ft. of 66" concrete pipe at a cost of \$12,411. Other major culvert projects during the summer included replacement of the Casstown-Clark Culvert #0.257, a box structure costing \$32,246, and repair of the Ginghamburg Culvert 0.086 at a cost of \$5,942. All totaled, our crews replaced 40 culverts in 2014, at a cost of \$160,899.

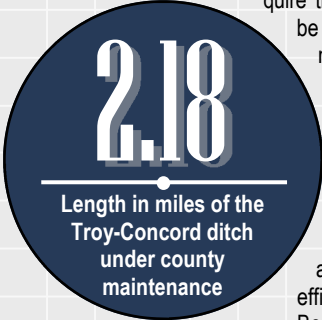


Casstown-Clark Culvert # 0.257

In 2015 we plan to replace 50 culverts as part of our on-going culvert upgrade program.

DITCHES

Annual assessments are collected to finance on-going maintenance on 23 ditches in Miami County (see chart at left). These assessments are collected from adjacent landowners who benefit from the drainage improvement. State law limits ditch fund maintenance reserves to a set percentage of the construction cost of the ditch. Eight ditches (double asterisk) require that the original construction cost...often decades old... be adjusted for inflation and other variables so that assessments keep pace with current-day maintenance costs. Seven other ditches (single asterisk) will be evaluated to determine if current assessment collection percentages need to be increased to generate sufficient maintenance revenue.



Length in miles of the Troy-Concord ditch under county maintenance

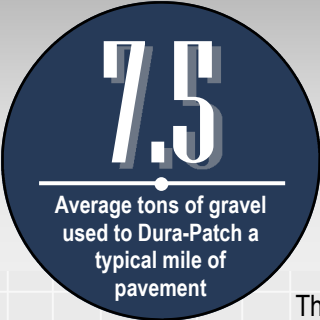
Routine ditch maintenance includes mowing and weed-spraying, but occasionally a drainage-way may require a cleanout or more extensive repair to restore drainage efficiency. In 2014 the Leonard, Troy-Concord, Dye Mill, Beard, Helmick-Harlacher, and several other ditches required such repairs. In 2015 we anticipate that 12 of the 23 ditches at left may require some sort of maintenance exceeding the norm, including ditch crossing replacement, tree and brush removal, open ditch cleanout, and tile main and/or spur repair/replacement.

Finally, as a safety measure and to improve overall drainage adjacent to the road right-of-way, ditch setback work will continue on portions of Nashville Road during the summer of 2015.

Tax Map

Under the direction of department supervisor Dennis Ventura, the Tax Map Department draws and maintains tax maps for over 50,500 parcels of land in Miami County. A tax map shows the shape, size and owner of each parcel of land, and is used by the County Auditor to determine property taxes used to support local school districts. An on-going initiative of the department is the transition of tax map data into the

Roads



Average tons of gravel used to Dura-Patch a typical mile of pavement

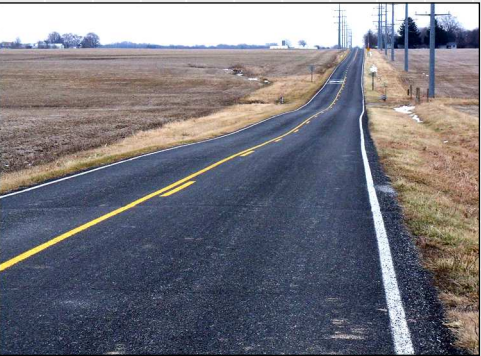
The Highway Department is responsible for maintaining 425 miles of highways in serviceable condition using limited funding resources. We accomplish this through an aggressive preventive maintenance program designed to prolong the life of our highway pavement to the greatest extent possible. In 2014, this program included 33 miles of dura-patching, 15 miles of crack-sealing, and numerous berm repairs as needed.

The 2014 paving program resulted in 12.29 miles of county highways being paved with 448 asphalt at a cost of \$887,486. As a less expensive option, we also chip sealed an additional 7.85 miles of roadway at a cost of \$174,974. An asphaltic fog seal was applied to 7.08 miles of the chip sealed roads to provide an additional wear layer. Depending upon the durability of the fog sealant over the next few years, we may adopt this process as a standard application on all future chip seal projects to extend the life of our pavements as economically as possible.



Fog Sealing - Rusk Road

In addition to regular road maintenance, our highway crews completed ditch setback work on Alcony-Conover Rd. Ditch setbacks are safety improvements that provide an increased margin for error for vehicles that inadvertently migrate off the road pavement.



Fog sealed road after six months

Limited finances will continue to present challenges to our 2015 road maintenance program. Our forecast for resurfacing will remain below the industry standard, with only 13 miles of highway projected for paving at a cost of around \$900,000. Since funds are tight, we will continue to aggressively pursue outside revenue sources to help offset our costs. For example, last year we secured an additional \$408,608 in Federal STP funds which helped to pay the \$681,013 price tag for paving County Rd. 25A from Donn Davis Way to the Troy Corporation limit.

In spite of limited funding, we have a busy summer planned for 2015. In addition to extensive patching and crack-sealing work to be done throughout the county, ditch setbacks will be completed on portions of Nashville and Farrington Roads and we will be working on needed improvements to an "s-curve" section of Emerick Road just west of the Jay Road intersection.

Also, construction will begin this year on the much-awaited Eldean Road/CSX Spur reconstruction project, which has been approved for up to \$3,626,530 in Federal STP funding. The total cost for the improvement is currently estimated at \$3,420,838 including construction, right-of-way, utility relocation, plan preparation, and engineering. \$700,598 of the total cost constitutes our 20% local funding obligation. Plans call for the elimination of the existing sub-standard bridge overhead clearance of 9'-8" which is normally hit 2 or 3 times a year. The road elevation will be lowered and the railroad tracks will be raised in order to provide increased clearance under the bridge. Additionally, in conjunction with the railroad overpass work, Eldean Road will be widened from two to three lanes from County Road 25A to the west approximately 0.33 miles, and the traffic signal at the Eldean/County Road 25A intersection will be upgraded.

In conjunction with the railroad overpass work, we will also be contracting out the replacement of the Eldean Road River Bridge, just to the east of County Road 25A. This will allow us to close Eldean Road only once in order to complete two major projects within close proximity to one another, in what we hope will represent the least possible disruption to the travelling public.



Eldean Road/CSX Spur

Bridges

The 2014 summer kept our in-house bridge crew busy with the replacement of the Hemm Road Bridge #0.64 and the adjoining concrete retaining wall that channelizes the Leonard Ditch adjacent to the roadway. Roughly 260 feet of retaining wall had deteriorated significantly, requiring that our crew demolish the old wall, form up a new wall, and seamlessly connect the wall to the abutments of the new bridge. The complexity and overall scope of the project resulted in our crew working most of the summer to complete the work. Overall cost for replacement of the retaining wall and bridge was \$94,536, the majority of which was funded through the Miami County Bridge Levy.

After completing work on the Hemm Road Bridge, our in-house crew worked into the fall and early winter to replace the Snodgrass Road Bridge # 9.11. This replacement wasn't originally scheduled for 2014, but due to significant structural deficiencies in the wood decking which arose during the year, replacement of the structure (using concrete beams) became a priority. Bridge Levy dollars were used to pay the \$157,013 cost of this project.

In addition to in-house work, four bridge-related projects were contracted out in 2014. The first was replacement of the Swailles Road Bridge #2.94, which cost \$268,989 in Bridge Levy funds. This project re-



Hemm Road Bridge #0.64

placed a load-rated wooden deck bridge with a state-of-the-art concrete beam structure that should remain serviceable for decades. Secondly, the Frederick-Garland Road Bridge #6.67 required pavement joint repairs at each end of the structure, costing \$15,257. In the third project, Brumbaugh Construction replaced the wooden floor decking on the Eldean Covered Bridge, the final phase in a series of renovations to the bridge that were begun in 2006. The cost for this renovation was \$103,897, with a federal grant supplying \$43,835 in material costs toward that total. And finally, Piqua Steel Co. completed repair work to the Troy-Sidney Road Bridge #10.21 in order to keep the bridge serviceable until a total replacement can be undertaken in 2015.

Overall, in 2014 we were able to remove two bridges from our list of reduced-load posted structures, leaving 17 posted bridges in our inventory. In future years our goal is to replace or rehabilitate at least two posted bridges each year as we continue to reduce the number of load-reduced bridges in the county.

2015 will be another busy year for our bridge program, as we look to replace the Rudy Road Bridge #3.06, the Casstown-Clark Road Bridge #2.06, the Covington-Gettysburg Road Bridge #2.12, and the Troy-Sidney Road Bridge #10.21. Our largest bridge project will be replacement of the Eldean Road Bridge #3.51 (see Future Projects on Page 7 for cost details). As always, our commitment is to use all available resources to insure the continued serviceability and safety of our county-wide bridge system.



Swailles Road Bridge #2.94



Snodgrass Road Bridge #9.11



Eldean Covered Bridge
Wood Plank Floor Replacement



Hemm Road Retaining Wall

477

Feet of rebar incorporated into a typical 20' concrete bridge beam

Services

TRAFFIC CONTROL / SIGNAGE

During 2014 we replaced approximately 350 of the roughly 9500 county and township signs we maintain in order to comply with new retro-reflectivity standards adopted by the Federal Highway Administration. This upgrade, initially begun in 2012, was completed for regulatory and warning signs 3 years prior to the deadline established by the FHA, at a cost of \$38,320 (80% of which was funded with federal grant money). In 2015 we will be continuing with retro-reflectivity upgrades to street name and guide signs, with a target completion date well before the 2018 FHA deadline for replacement of such signs. The net effect of these upgrades is greatly improved sign visibility, both during the day and at night, leading to enhanced motorist safety.



In addition to the above replacements, our sign shop replaces an average of 170 signs each year due to accidents, and nearly 75 annually due to vandalism. The vandalism totals don't include signs that are replaced prior to the end of their 20-year life expectancy due to years of being dented, rocked, shot, etc.

In 2013 a comprehensive sign inventory was conducted by LJB Incorporated, with whom we also contracted to install a GPS-based software upgrade that enhances our in-house sign management capability. The inventory and accompanying software (90% federally funded) provide immediate web-based access to precise location info, orientation, and sign parameters, allowing Sign Shop personnel to utilize the

latest technology in tracking, placing, and maintaining our signs. Last year we worked with LJB to resolve a number of discrepancies in the inventory and software in order to fully optimize the system.

Throughout 2014 the Sign Shop replaced 42 Welcome Signs on County Roads, using a design which incorporated the new Miami County logo. These signs replaced aging welcome signs which were due for an upgrade.

TRAFFIC COUNTS/SPEED LIMIT STUDIES

We conduct 48-hour traffic counts at approximately 140 locations each summer on county and township roads. The traffic count data is used to establish priorities for roadway repair, repaving, lane-width alterations, signage requirements, and other highway-related improvements.

Speed studies are occasionally conducted to determine appropriate speed limits based upon roadway improvements or alterations. In 2014, a speed study was conducted on a portion of McKaig Road.

SNOW & ICE REMOVAL

County crews utilize both 100% salt and a 50/50 salt+grit mix for application on county roadways during ice and/or snow events. During the 2014-2015 season, our snow plows deiced and/or plowed on 37 days, during which we applied a total of 2,046 tons of salt. The time required to perform plowing/deicing duties equaled 5,717 hours, and total Labor/Material/Equipment cost for the 2014-2015 season was \$508,860.



MOWING & SPRAYING

County roadsides are mowed and sprayed each growing season in accordance with provisions of the Ohio Revised Code. We typically accomplish this by using both in-house staff and contracted services. In 2014, Quick Mow, Inc. mowed the north half of the county at a cost of \$64.80 per mile. County crews mowed the south half of the county, as well as 113 acres of agricultural drainage ditches, utilizing in-house equipment and resources.

We contract out all ditch, guardrail, and roadside spraying to control noxious weeds and undesirable vegetation. In 2014 the contracts went to Vegetation Technology Services, LLC, who sprayed 113 acres of agricultural ditches at a cost of \$11,280, and True Quality Services, LLC, who sprayed 380 miles of roadside ditches and 89,328 linear feet of guardrail at a total cost of \$10,827, which was a 5% decrease from the previous year.

PAVEMENT MARKING

In 2014 we utilized contracted services to complete all of our edgeline and centerline marking on both county and township roads. We contracted with Oglesby Construction to complete centerline marking on 141 road miles of county highway and 81 miles of township highway at a cost of \$51,821. Oglesby also edgeline 304 lane miles of county highway and 147 miles of township highway at a cost of \$99,706. By contracting out all of our edgeline marking, we saved the county approximately \$70,000 when compared to previous years, when we undertook edgeline marking on county roads using in-house manpower, equipment, and resources.

958

Tons of additional salt used in 2014 compared to the previous year